

Application No. 09/661,725  
Amendment dated December 18, 2003  
Reply to Office Action of October 2, 2003

### REMARKS/ARGUMENTS

Applicants wish to thank the Examiner for considering the present application. In the Office Action dated October 2, 2003, claims 1-19 are pending in the application. Applicants respectfully request the Examiner for reconsideration.

Two figures have been amended. In Fig. 1, "F" has been added after reference numeral "16". See page 6, lines 9 and 10 stating that a "plurality of user terminals 16M and 16F are used to illustrate mobile users and fixed users, respectively". In Fig. 4, the previously omitted reference numeral "78" has been added and "ANTENNNA" has been corrected to read "ANTENNA". See page 10, lines 11-14, including the reference to "main array antenna elements 78".

Claims 1, 5, 9-11, and 18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Gross* (6,507,739) in view of *Yeh* (4,085,368).

Claim 1 is directed to a communications system that includes a stratospheric platform that has a payload controller and a phased array antenna that has main array elements and auxiliary elements for canceling interference. Claim 1 has been amended to clarify that the interference canceling is between side lobes of the plurality of communication beams. The *Gross* reference teaches an aircraft 210 that provides communication channels to cellular communication units. The *Yeh* reference teaches an apparatus for canceling interference for a phased array antenna that uses an auxiliary array of phased array antennas so that an air signal is derived which is fed back to circuitry which modifies at least one signal received by the auxiliary array. Side lobe interference is described in the background of the *Yeh* reference which

Application No. 09/661,725  
Amendment dated December 18, 2003  
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describes disadvantages of prior systems. Thus, it appears that the *Yeh* reference teaches away from side lobe interference cancellation due to the disadvantages listed in the background.

Claim 1 also recites that the gateway station scales a plurality of elements to form a plurality of beams and auxiliary output. The gateway station communicates a control signal to the stratospheric platform to communicate a scaling of elements to form the communication beams and the auxiliary element output. The gateway station is not taught or suggested in the *Yeh* reference. Applicants therefore respectfully request the Examiner to reconsider claim 1.

Claims 5 and 9-11 are further limitations of claim 1 and are believed to be allowable for the same reasons set forth above.

Claim 18 has also been amended to recite the step of generating the auxiliary element outputs in response to the auxiliary element control signal by the stratospheric platform so that the side lobe interference from the communication beams is reduced. Applicants respectfully submit that this claim is also allowable for the same reasons set forth above.

Claims 2-4 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Gross* in view of *Yeh* as applied to claims 1, 5, 9-11, and 18 above, in further view of *Khalifa* (6,526,288).

Claims 2, 3, and 4 are further limitations of claim 1. The Examiner states that the *Khalifa* reference teaches a demultiplexer. A demultiplexer is taught in the *Khalifa* reference. However, the *Khalifa* reference does not teach that the payload controller comprises a demultiplexer. Further, the *Khalifa* reference does not teach or

Application No. 09/661,725  
Amendment dated December 18, 2003  
Reply to Office Action of October 2, 2003

suggest the elements missing from the other two references as described above with respect to claim 1.

Further, the *Khalifa* reference does not teach or suggest the use of a phased array antenna. Claims 3 and 4 are related to a phased array antenna in that claim 3 recites a "plurality of element control signals" and claim 4 recites "the RF feed is coupled to the elements of the phased array antenna." Thus, these elements are not taught or suggested in the *Khalifa* reference. Applicants therefore respectfully request the Examiner to reconsider claims 2-4.

Claims 7 and 8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Gross* in view of *Yeh* in further view of *Chang* (6,380,893). Claims 7 and 8 are further limitations of claim 1. The *Chang* reference does not teach or suggest the missing elements described above with respect to claim 1. Therefore, Applicants respectfully request the Examiner to reconsider the rejection of claims 7 and 8.

Claims 12-16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Gross* in view of *McWhirter* (4,727,503) in further view of *Howard* (5,715,516), in further view of *Chang*.

Claim 12 describes a communication system that has a ground station that has a beam generator, a digital beam former circuit, a multiplexer, and an RF subsystem. Claim 12 further recites a stratospheric platform that has a payload receiver and a demultiplexer. The digital beam former circuit generates first element control signals for generating communication beams and a plurality of auxiliary element control signals for canceling interference from the side lobes of the communication beams. The *McWhirter* reference does not teach or suggest that the beam former is in a

Application No. 09/661,725  
Amendment dated December 18, 2003  
Reply to Office Action of October 2, 2003

ground station and the first element control signals and the auxiliary element control signals are communicated to a stratospheric platform. Further, the *Howard* reference also fails to teach or suggest the use of a stratospheric platform and a ground station communicating first element control signals and auxiliary element control signals to the stratospheric platform.

The *Chang* reference teaches a stratospheric platform, however, no teaching or suggestion is provided in the *Chang* reference for grouping the elements into a set having an auxiliary element control signal that is used to cancel the interference in the side lobe of the communication beams. Although the *Chang* reference teaches different groupings, no grouping is provided for canceling side lobes of the communication beams. The *Chang* reference is directed to a wave front projection beam former.

Furthermore, there is no teaching or suggestion for forming the combination of references set forth by the Examiner. The Examiner states that the motivation is to reduce interference and enhance transmission and reception quality. Applicants respectfully submit that none of the references teaches or suggests the combination of a ground station that generates first element control signals and auxiliary element control signals and a stratospheric platform that uses the auxiliary element control signals to cancel interference from the side lobes of the communication beams. Applicants respectfully request the Examiner to reconsider claims 12-16.

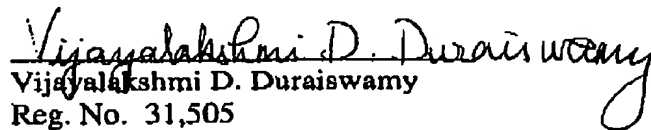
Claims 6, 17, and 19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Gross* in view of *McWhirter* in further view of *Howard* in view of *Chang*, in further view of *Ide* (6,556,845). Applicants respectfully submit that the *Ide*

Application No. 09/661,725  
Amendment dated December 18, 2003  
Reply to Office Action of October 2, 2003

reference does not teach or suggest the elements missing from claim 12. Applicants therefore respectfully request the Examiner to reconsider claims 6, 17, and 19

In light of the above amendments and remarks, Applicants submit that all rejections are now overcome. Applicants have added no new material to the application by these amendments. The application is now in condition for allowance and expeditious notice thereof is earnestly solicited. Should the Examiner have any questions or comments which would place the application in better condition for allowance, he is respectfully requested to call the undersigned attorney.

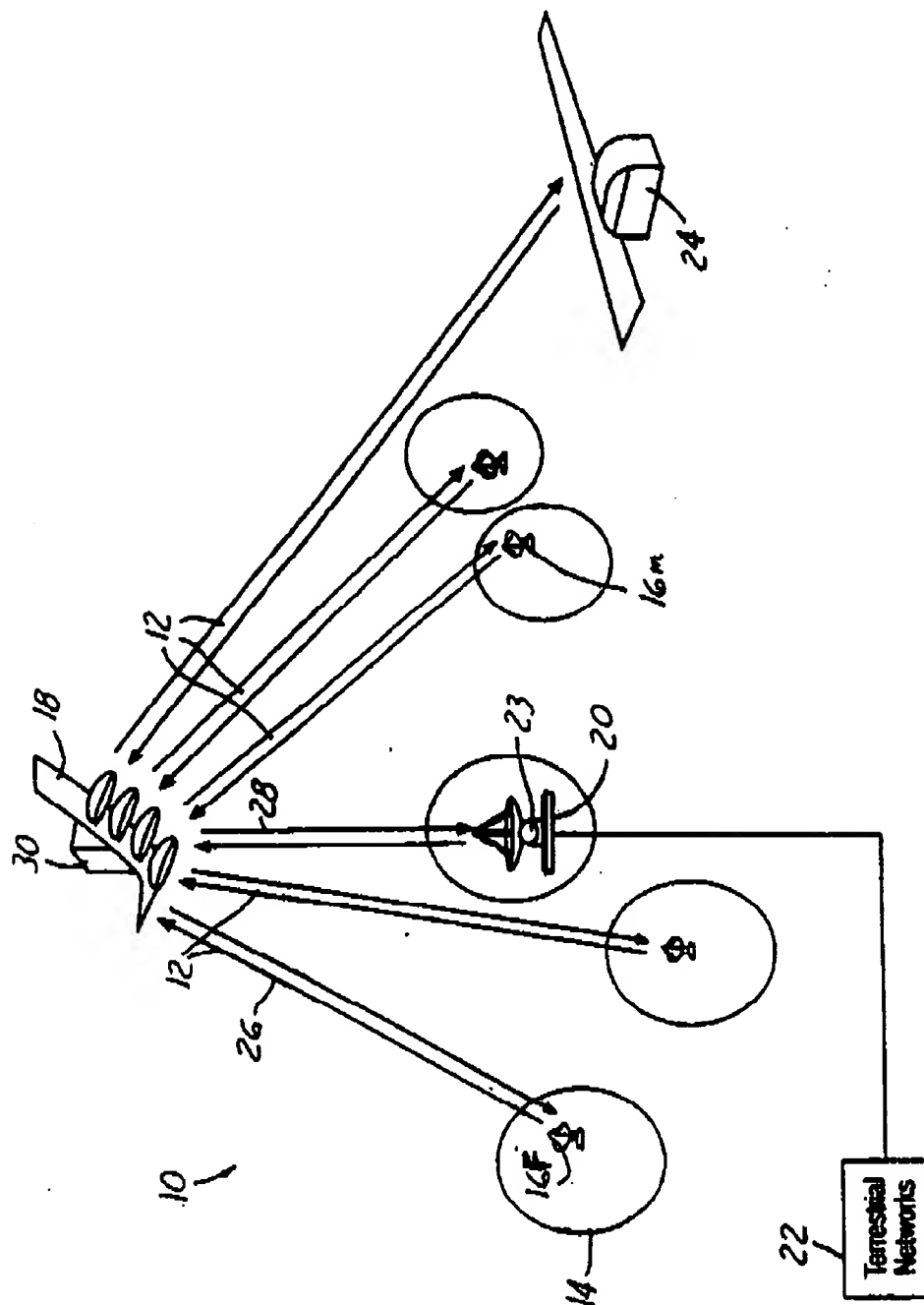
Respectfully submitted,

  
Vijayalakshmi D. Duraiswamy  
Reg. No. 31,505

Date: December 18, 2003

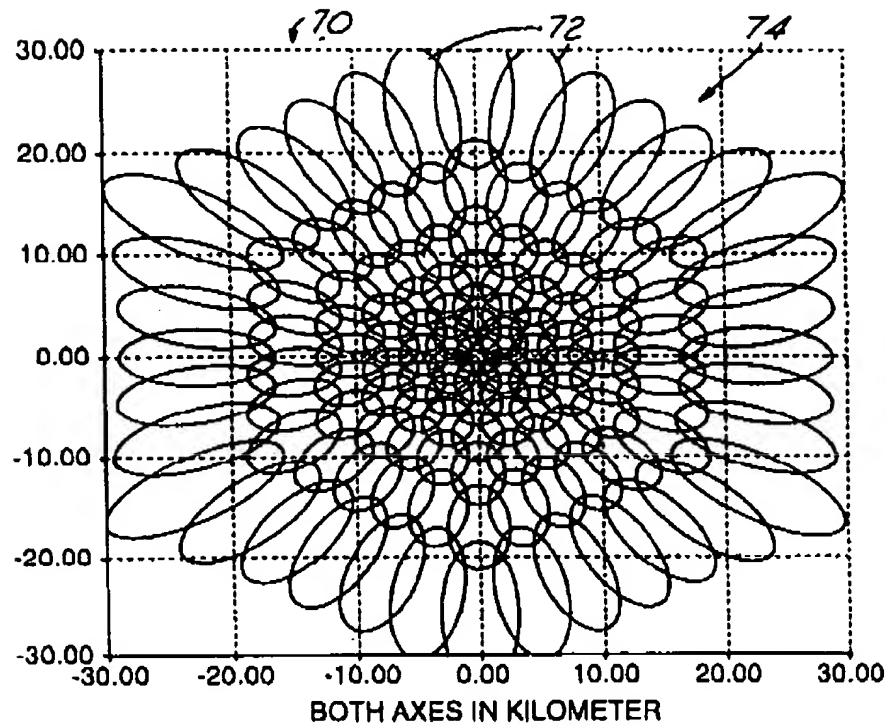
HUGHES ELECTRONICS CORPORATION  
RE/R11/A109  
P. O. Box 956  
El Segundo, CA 90245  
Telephone: (310) 964-0733

Application No. 09/661,725  
 Amdt. Dated December 18, 2003  
 Reply to Office Action  
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 Annotated Marked-up Drawing

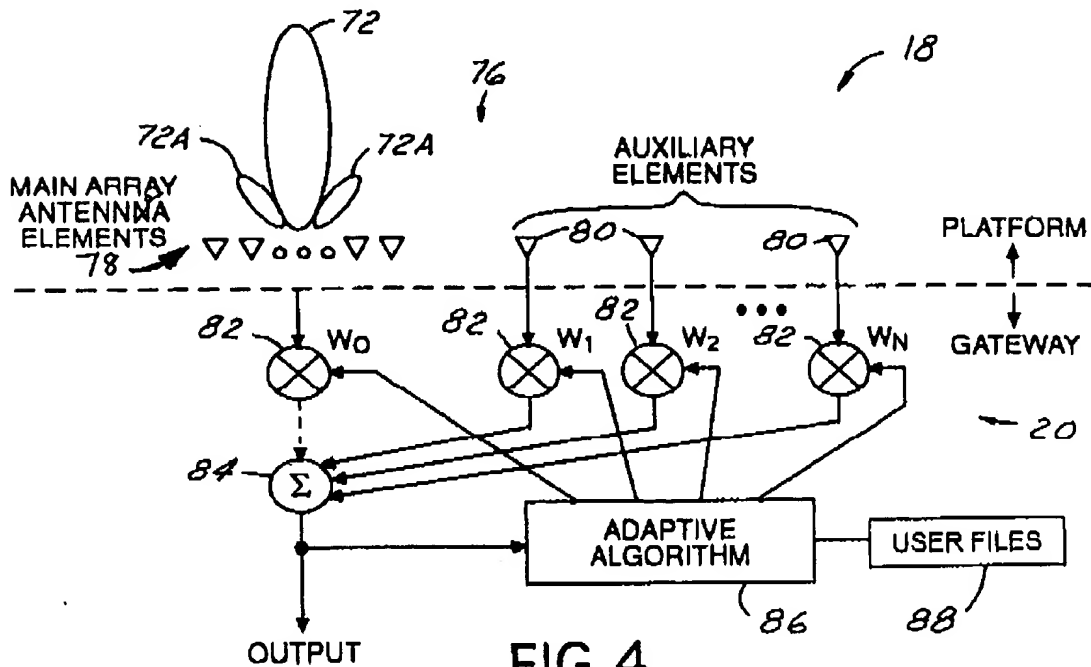


**FIG. 1**

Application No. 09/661,725  
 Amdt. Dated December 18, 2003  
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 of October 2, 2003  
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**FIG. 3**



**FIG. 4**